



MODUL PENINGKATAN PRESTASI TINGKATAN 5
TAHUN 2014
MAJLIS PENGETUA SEKOLAH MALAYSIA
(KEDAH)

MODUL A
KIMIA SPM
Kertas 1
Satu jam lima belas minit

JANGAN BUKA MODUL INI SEHINGGA DIBERITAHU

- 1. Kertas soalan ini adalah dalam dwibahasa.*
- 2. Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
- 3. Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

1. Diagram 1 shows the particles arrangement substance X
Rajah 1 menunjukkan susunan zarah bagi bahan X..

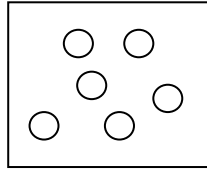


Diagram 1

Rajah 1

Which of the following is the physical state of X?
Antara berikut keadaan fizikal X?

- A Solid and liquid
Pepejal dan cecair
- B Liquid
Cecair
- C Solid
Pepejal
- D Gas
Gas
2. Which of the following is **not** the type of particle?
*Antara berikut yang manakah **bukan** jenis zarah?*
- A Compound
Sebatian
- B Molecule
Molekul
- C Atom
Atom
- D Ion
Ion
3. What is the standard atom is used to determine relative atomic mass?
Apakah atom piawai yang digunakan untuk menentukan jisim atom relatif?
- A Hydrogen-1
Hidrogen-1
- B Carbon-12
Karbon-12
- C Oxygen-16
Oxygen -16
- D Nitrogen-14
Nitrogen -14

4. A molecular formula of a substance shows
Formula molekul sebatian menunjukkan
- A formula of a molecule
formula satu molekul bahan
- B actual mass of a substance
jisim sebenarnya suatu sebatian
- C actual number of atoms of each elements
bilangan sebenarnya atom-atom bagi setiap unsur
- D simplest ratio for the number of atoms
nisbah paling ringkas bagi bilangan atom
- 5 Which of the following pairs of group and name is **correct** in the Periodic Table?
Antara berikut yang manakah pasangan yang betul bagi kumpulan dan nama di dalam Jadual Berkala?

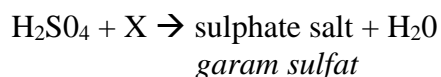
	Group <i>Kumpulan</i>	Name <i>Nama</i>
A	1	Alkali earth metal <i>Logam alkali bumi</i>
B	2	Alkali metal <i>Logam alkali</i>
C	17	Halogen <i>Halogen</i>
D	18	Transition element <i>Unsur peralihan</i>

- 6 Each elements in the same group of the Periodic Table have
Unsur-unsur dalam kumpulan sama di dalam Jadual Berkala Unsur mempunyai
- A similar physical properties.
sifat fizik yang sama.
- B different chemical properties.
sifat kimia yang berbeza
- C equal number of proton in the nucleus of an atom.
bilangan proton yang sama dalam nukleus atomnya.
- D equal number of electron in the outermost shell of an atom
bilangan elektron yang sama di petala terluar atomnya.

- 7 Which of the following substances is a covalent compound?
Sebatian manakah yang merupakan sebatian kovalen?
- A Magnesium chloride
Magnesium klorida
 - B Lead(II) chloride
Plumbum(II) klorida
 - C Calcium oxide
Kalsium oksida
 - D Karbon dioxide
Karbon dioksida
- 8 Which of the following compounds has the lowest melting point?
Sebatian manakah yang mempunyai takat lebur yang paling rendah?
- A Magnesium chloride
Magnesium klorida
 - B Sulphur dioxide
Sulfur dioksida
 - C Iron(III) oxide
Ferum(III) oksida
 - D Lead(II) oxide
Plumbum(II) oksida
- 9 Which of the following is **not** the function electrolysis in daily lives?
*Antara yang berikut, yang manakah **bukan** fungsi elektrolisis dalam kehidupan seharian?*
- A Prevention of corrosion
Mencegah kakisan
 - B Generation of electrical energy
Penjanaan tenaga elektrik
 - C Electroplating metals
Penyaduran logam
 - D Extraction of metals
Pengekstrakan logam

- 10 Metal P displaced zinc from zinc nitrate solution but does not displace magnesium from magnesium nitrate solution. Metal P could be
Logam P menyesarkan zink daripada larutan zink sulfat tetapi tidak menyesarkan magnesium daripada larutan magnesium sulfat. Logam P mungkin
- A Lead
Plumbum
 - B Copper
Kuprum
 - C Calcium
Kalsium
 - D Aluminium
Aluminium
- 11 Which of the following is **not** the property of an acid?
*Antara berikut yang manakah **bukan** sifat satu asid?*
- A It conducts electricity
Mengkonduksikan elektrik
 - B It turns red litmus paper to blue
Menukarkan kertas litmus merah kepada biru
 - C It dissolve in water to produce hydrogen ion
Larut dalam air menghasilkan ion hidrogen
 - D It reacts with alkali to produce salt and water
Bertindak balas dengan alkali untuk menghasilkan garam dan air
- 12 Which of the following reactants will produce salt and water only?
Antara berikut, bahan tindak balas yang manakah akan menghasilkan garam dan air sahaja?
- A Copper(II) oxide and sulphuric acid
Kuprum(II) oksida dan asid sulfurik
 - B Lead(II) chloride and sulphuric acid
Plumbum(II) klorida dan asid sulfurik
 - C Sodium and hydrochloric acid
Natrium dan asid hidroklorik
 - D Magnesium and nitric acid
Magnesium dan asid nitrik

- 13 The following equation shows the reaction to produce a blue solution.
Persamaan berikut menunjukkan tindak balas untuk menghasilkan larutan biru.



What is X?

Apakah bahan X?

- A Potassium hydroxide
Kalium hidroksida
- B Lead(II) oxide
Plumbum(II) oksida
- C Barium hydroxide
Barium hidroksida
- D Copper(II) oxide
Kuprum(II) oksida
- 14 Which alloy contains a mixture of copper and tin?
Aloi manakah yang mengandungi campuran kuprum dan timah?
- A Steel
Keluli
- B Pewter
Piuter
- C Bronze
Gangsa
- D Brass
Loyang
- 15 The following information is about a process X.
Maklumat yang berikut adalah tentang proses X.

- Using iron powder as the catalyst
- The product of the reaction is alkaline.
- *Menggunakan serbuk besi sebagai mangkin*
- *Hasil tindak balas bersifat alkali.*

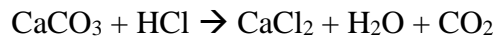
Based on the information, what is process X?

Berdasarkan maklumat tersebut, apakah proses X?

- A Hydrogenation
Penghidrogenan
- B Ostwald
Ostwald
- C Contact
Sentuh
- D Haber
Haber

- 16 The following chemical equation represents the reaction between calcium carbonate, CaCO_3 and hydrochloric acid, HCl .

Persamaan kimia berikut mewakili tindak balas antara kalsium karbonat, CaCO_3 dan asid hidroklorik, HCl .



Which changes is the best to be used to determine the rate of reaction?

Perubahan manakah paling baik digunakan untuk menentukan kadar tindak balas?

- A Mass of calcium carbonate per unit time
Jisim kalsium karbonat per unit masa
 - B Volume of carbon dioxide released per unit time
Isipadu karbon dioksida dibebaskan per unit masa
 - C Colour of the solution per unit time
Warna larutan per unit masa.
 - D Concentration of calcium chloride produced per unit time
Kepekatan kalsium klorida terhasil per unit masa
- 17 The collision theory states that for a chemical reaction to occur, the reacting particles must...
- Teori perlanggaran menyatakan bahawa bagi tindak balas kimia boleh berlaku, zarah-zarah yang bertindak balas mesti...*
- A possess energy which is less than activation energy.
mengandungi tenaga yang kurang dari tenaga pengaktifan.
 - B collide in the correct orientation.
berlanggar pada orientasi yang betul.
 - C have high kinetic energy.
mempunyai tenaga kinetik yang tinggi.
 - D move
bergerak

- 18 Rajah 2 menunjukkan suatu gambar rajah profil tenaga.
Diagram 2 shows an energy profile diagram.

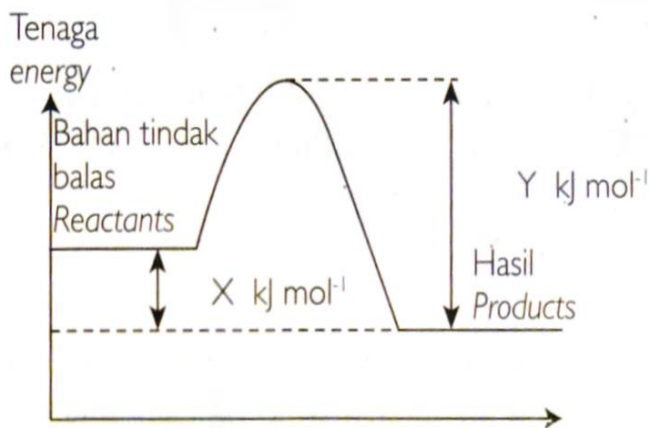


Diagram 2
Rajah 2

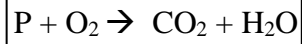
Berdasarkan rajah 2, apakah jumlah tenaga pengaktifan bagi tindak balas di atas?
Based on the diagram, what is the amount of activation energy?

- A $(X - Y) \text{ kJ mol}^{-1}$
 B $(Y - X) \text{ kJ mol}^{-1}$
 C $X \text{ kJ mol}^{-1}$
 D $Y \text{ kJ mol}^{-1}$
- 19 Which of the following is the general formula of an unsaturated hydrocarbon?
Manakah formula am berikut adalah satu hidrokarbon tak tepu?

- A $\text{C}_n\text{H}_{2n+1}\text{COOH}$
 B $\text{C}_n\text{H}_{2n+1}\text{OH}$
 C $\text{C}_n\text{H}_{2n+2}$
 D C_nH_{2n}

- 20 The following equation shows the combustion reaction of substance P in excess oxygen.

Persamaan berikut menunjukkan tindakbalas pembakaran sebatian P dalam oksigen berlebihan.



Substance P is probably ...

Sebatian P mungkin adalah ...

- A Carbon
Karbon
 - B Butanol
Butanol
 - C Polivinil chloride
Polivinil klorida
 - D Hydrogen gas
Gas hidrogen
21. Diagram 3 shows the structural formula of an ethanoic acid.
Rajah 3 menunjukkan formula structural bagi asid etanoik.

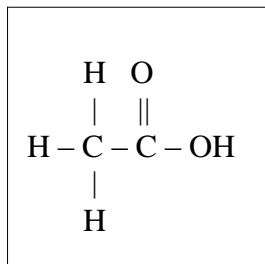


Diagram 3
Rajah 3

The empirical formula of ethanoic acid is

Formula empirik bagi asid etanoik ialah

- A CHO_2
- B CH_2O
- C $\text{C}_2\text{H}_4\text{O}_2$
- D $\text{C}_3\text{H}_6\text{O}_3$

- 22 Diagram 4 shows the Periodic Table.
Rajah 4 menunjukkan Jadual Berkala Unsur.

	1	2											13	14	15	16	17	18
	S														T			
	U																V	

Diagram 4

Which of the following element has the greatest ability to release electron(s)?
Antara yang berikut, manakah unsur yang mempunyai keupayaan yang paling tinggi untuk melepaskan elektron?

- A S
- B T
- C U
- D V

- 23 Diagram 5 shows two elements of Period 3 in the Periodic Table.
Rajah 5 menunjukkan 2 unsur bagi Kala 3 dalam Jadual Berkala.

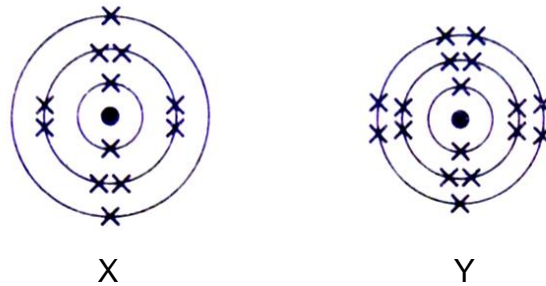


Diagram 5

Atom Y is smaller than atom X because
Atom Y lebih kecil daripada atom X kerana

- A the nucleon number of atom Y is greater.
nombor nukleon atom Y lebih besar.
- B atom Y has more valence electrons.
atom Y mempunyai lebih banyak elektron valens.
- C atom Y is a halogen.
Atom Y ialah satu halogen.
- D the proton number of atom Y is greater.
nombor proton atom Y lebih besar.
- 24 Diagram 6 shows symbol of an element T.
Rajah 6 menunjukkan simbol unsur T.

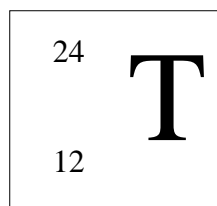


Diagram 6

What is the electron arrangement of ion T?
Apakah susunan electron bagi ion T?

- A 2.8
- B 2.8.2
- C 2.8.8
- D 2.8.8.8

- 25 Table 1 belows shows the proton number of elements X and Y.
Jadual 1 menunjukkan nombor proton unsur X dan Y.

Element <i>Unsur</i>	X	Y
Proton number <i>Nombor proton</i>	6	8

Table 1

What type of bond and the chemical formula of the compound formed between X and Y?

Apakah jenis ikatan dan formula kimia bagi sebatian yang terbentuk antara atom X dan Y?

	Type of bond Jenis ikatan	Chemical formula Formula kimia
A	Ion <i>Ion</i>	YX_2
B	Ion <i>Ion</i>	XY_2
C	Covalent <i>Kovalen</i>	XY_2
D	Covalent <i>Kovalen</i>	YX_2

- 26 Diagram 7 shows the apparatus set-up used for the purification of copper metal through electrolysis.

Rajah 7 menunjukkan susunan radas yang digunakan untuk penulenan logam kuprum melalui elektrolisis.

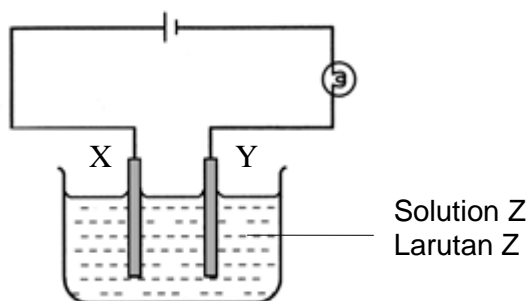


Diagram 7

Which of the following substances is suitable to be used as electrode and electrolyte.
Manakah antara bahan-bahan berikut yang sesuai digunakan sebagai elektrod dan elektrolit.

	Electrode X <i>Elektrod X</i>	Electrode Y <i>Elektrod Y</i>	Solution Z <i>Larutan Z</i>
A	Pure copper <i>Kuprum tulen</i>	Impure copper <i>Kuprum tak tulen</i>	Copper(II) sulphate <i>Kuprum(II) sulfat</i>
B	Impure copper <i>Kuprum tak tulen</i>	Pure copper <i>Kuprum tulen</i>	Copper(II) nitrate <i>Kuprum(II) nitrat</i>
C	Pure copper <i>Kuprum tulen</i>	Impure copper <i>Kuprum tak tulen</i>	Copper(II) carbonate <i>Kuprum(II) karbonat</i>
D	Impure copper <i>Kuprum tak tulen</i>	Pure copper <i>Kuprum tulen</i>	Copper(II) carbonate <i>Kuprum(II) karbonat</i>

- 27 Table 2 shows the observations of electrolysis using carbon electrode and electrolyte W.

Jadual 2 menunjukkan pemerhatian bagi elektrolisis menggunakan elektrod karbon dan elektrolit W.

Electrode <i>Elektrod</i>	Observation <i>Pemerhatian</i>
Anode <i>Anod</i>	A greenish-yellow gas released <i>Gas berwarna kuning kehijauan terbebas</i>
Cathode <i>Katod</i>	A colorless gas which burns with a 'pop' sound is released <i>Gas yang tidak berwarna dan terbakar dengan bunyi pop terbebas</i>

Table 2

The electrolyte W maybe

Elektrolit W itu mungkin

- A Potassium iodide solution
Larutan kalium iodida
- B Copper(II) chloride solution
Larutan kuprum(II) klorida
- C Potassium chloride solution
Larutan kalium klorida
- D Magnesium bromide solution
Larutan magnesium bromide

- 28 Table 3 shows aqueous solutions P, Q, R and S with their pH values.

Jadual 3 menunjukkan larutan akueus P, Q, R, dan S dengan nilai pHnya

Aqueous solution <i>Larutan akueus</i>	L	M	N	O
pH value <i>Nilai pH</i>	6	7	8	9

Table 3

Which of the solution will react with calcium carbonate to release carbon dioxide?

Larutan manakah akan bertindak balas dengan kalsium karbonat untuk membebaskan karbon dioksida?

- A L
- B M
- C N
- D O

29 Glacial ethanoic acid does not change blue litmus paper to red.

The litmus paper turns red when added with

Asid etanoik glacial tidak menukarkan kertas litmus biru ke merah. Kertas litmus bertukar kepada merah apabila ditambah dengan

A propanol

propanol

B ethyl ethanoate

etil etanoat

C chloroform

klorofom

D water

air

- 30 Diagram 8 shows chemical tests of compound G.
Rajah 8 menunjukkan ujian kimia bagi sebatian G.

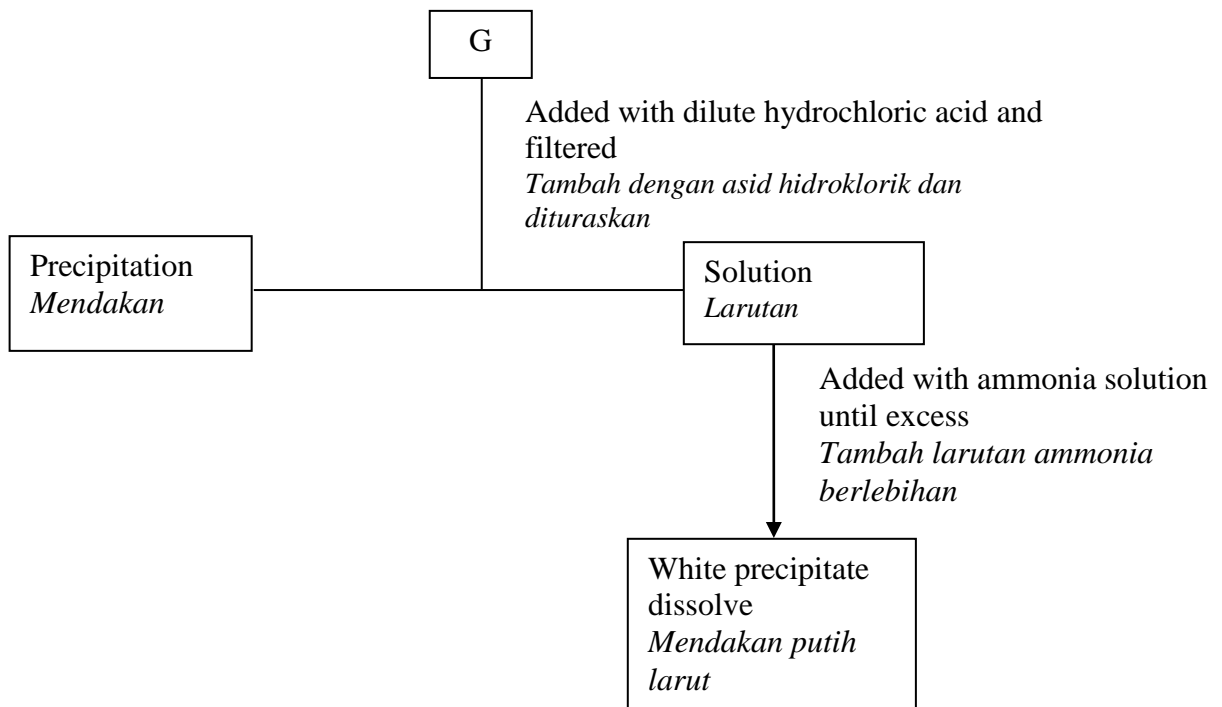


Diagram 8

G is a mixture of two types of salts. Which of the following is found in G?
G ialah campuran dua jenis garam. Antara berikut manakah terdapat dalam G?

- A Silver sulphate and copper(II) carbonate
Argentum sulfat dan kuprum(II) karbonat
- B Lead(II) nitrate and zinc carbonate
Plumbum(II) nitrat dan zink karbonat
- C Lead(II) nitrate and aluminium nitrate
Plumbum(II) nitrat dan aluminium nitrat
- D Magnesium sulphate and lead(II) carbonate
Magnesium sulfat dan plumbum(II) karbonat

- 31 The diagram 9 shows part of formula of P.
Rajah 9 menunjukkan sebahagian daripada formula bagi bahan P.

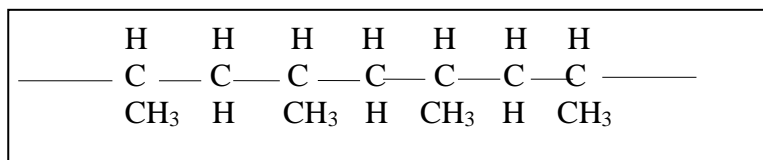


Diagram 9

Which of the following is the monomer of P?
Antara berikut yang manakah monomer bagi P?

- A CHCH=CH₂
 B CHCH=CH₃
 C CHCH₃=CH₂
 D CH₃=CH₃
- 32 The following equation represents the reaction between zinc and hydrochloric acid.
Persamaan berikut mewakili tindak balas antara kalsium karbonat dan asid hidroklorik.



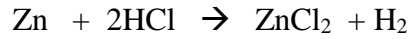
Predict the changes of the rate of reaction if the hydrochloric acid is replaced with sulphuric acid ?

Ramalkan perubahan yang berlaku pada kadar tindak balas jika asid hidroklorik diganti dengan asid sulfurik ?

- A Increase two times
Bertambah dua kali ganda
 B Decrease two times
Berkurang dua kali ganda
 C Remain unchange
Kekal tidak berubah
 D Increase a few time
Bertambah beberapa kali

- 33 The following equation shows the reaction between excess zinc powder and dilute hydrochloric acid:

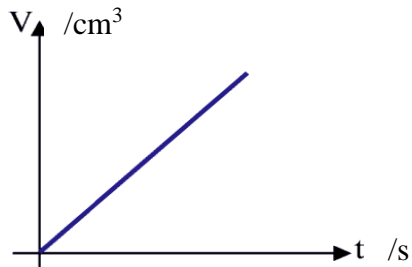
Persamaan berikut menunjukkan tindak balas antara serbuk zink berlebihan dengan asid hidroklorik cair:



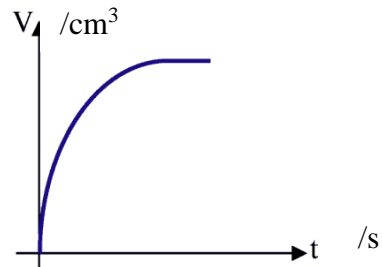
Which of the following graphs represents the volume of hydrogen gas, V , released against time, t ?

Antara graf berikut yang manakah mewakili isipadu gas hidrogen, V yang dibebaskan melawan masa, t ?

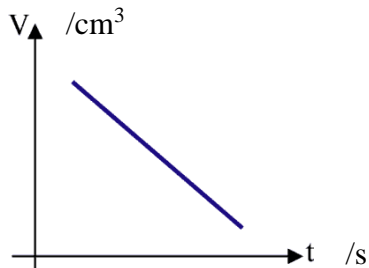
A



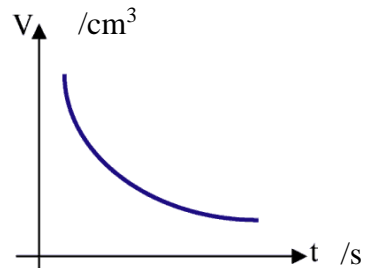
C



B



D



- 34 Diagram 10 shows the structural formula of a compound Q.
Rajah 10 menunjukkan formula struktur bagi sebatian Q.

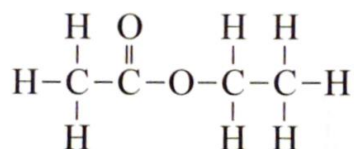


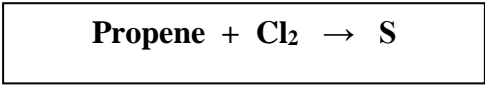
Diagram 10

What is the name of compound Q?

Apakah nama sebatian Q?

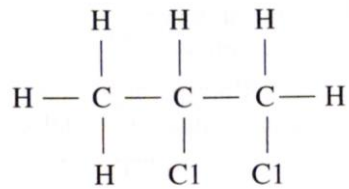
- A Ethyl methanoate
Etil metanoat
- B Ethyl ethanoate
Etil etanoat
- C Methyl ethanoate
Metil etanoat
- D Methyl propanoate
Metil propanoat

- 35 The following equation represents the reaction between propene and chlorine.
Persamaan berikut mewakili tindak balas antara propena dan klorin.

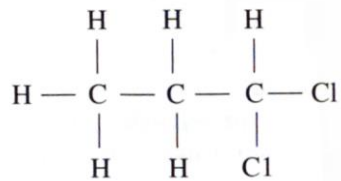


Which of the following is the structural formula for S?
Antara berikut yang manakah adalah formula struktur bagi S?

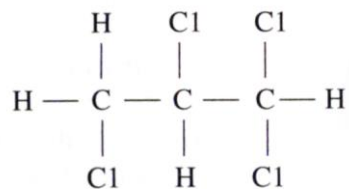
A



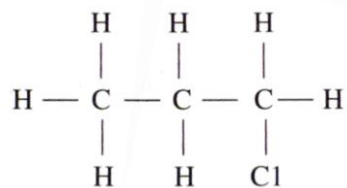
B



C



D



36. Diagram 11 shows the apparatus set-up for heating carbonate salt.
Rajah 11 menunjukkan susunan radas pemanasan garam karbonat.

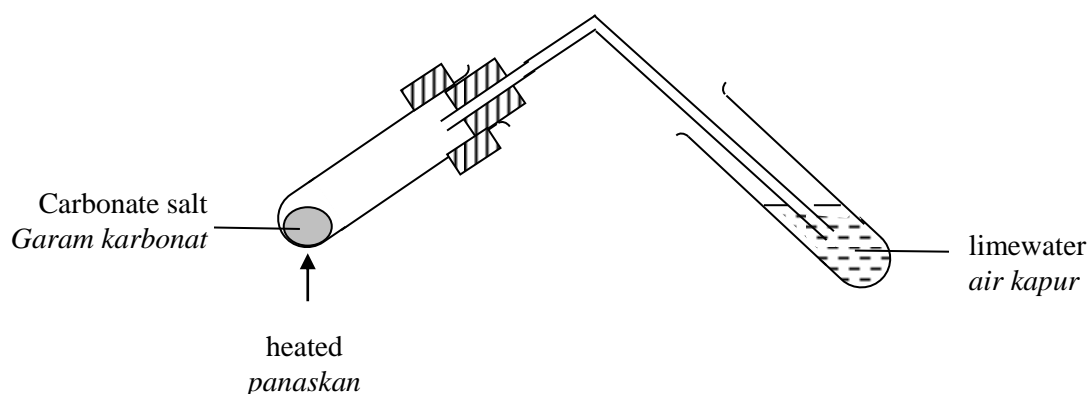


Diagram 11

Which of the following represents the reaction?

Antara berikut manakah yang mewakili tindak balas tersebut?

- A $\text{CaCO}_3 \rightarrow \text{Ca} + \text{CO}_2$
 B $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2 + \text{H}_2\text{O}$
 C $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
 D $\text{CaCO}_3 \rightarrow \text{Ca(OH)}_2 + \text{CO}_2 + \text{H}_2\text{O}$
37. Which of the following gases contains 0.4 mol of atoms at room temperature and pressure?
 [1 mol of gas occupies the volume of 24 dm³ at room temperature and pressure]
Antara gas berikut, yang manakah mengandungi 0.4 mol atom pada suhu dan tekanan bilik?
 [1 mol gas menempati isipadu sebanyak 24 dm³ pada suhu dan tekanan bilik]
- A 4.8 dm³ He
 B 4.8 dm³ CO₂
 C 4.8 dm³ SO₃
 D 4.8 dm³ H₂

- 38 Atom R reacts with atom W to form a compound with a formula RW_4 .
Given that the relative atomic mass of R is 12 and the relative atomic mass of W is 35.5.

Find the relative molecular mass of the compound formed by R and W.

Atom R bertindakbalas dengan atom W untuk menghasilkan sebatian dengan formula RW_4 .

Diberi jisim atom relatif R ialah 12 manakala jisim atom relatif W ialah 35.5.

Tentukan jisim molekul relative bagi sebatian yang terbentuk di antara R dan W.

- A 154.0
- B 130.5
- C 95.0
- D 47.5

- 39 Element X has 7 valence electrons and exist as diatomic molecule.
Which of the following chemical reactions represents when element X react with sodium?

Suatu unsur X mempunyai elektron valens 7 dan wujud sebagai molekul dwiatom.

Antara berikut, yang manakah persamaan kimia yang mewakili tindak balas antara unsur X dengan natrium?

- A $\text{Na(p)} + \text{X(g)} \rightarrow \text{NaX(p)}$
- B $2\text{Na(p)} + \text{X(g)} \rightarrow \text{Na}_2\text{X(p)}$
- C $4\text{Na(p)} + 3\text{X}_2\text{(g)} \rightarrow 2\text{Na}_2\text{X}_3\text{(p)}$
- D $2\text{Na(p)} + \text{X}_2\text{(g)} \rightarrow 2\text{NaX(p)}$

- 40 Table 4 shows the information about three voltaic cells.
Jadual 4 menunjukkan maklumat tentang tiga sel voltan.

Pairs of metals <i>Pasangan logam</i>	Terminal positif <i>Positive terminal</i>	Potential difference / V <i>Beza keupayaan / V</i>
W, Y	Z	3.1
X, Y	Y	0.3
W, X	X	1.8

Table 4

What is the potential difference of a voltaic cell using metal Y and Z as electrodes?
Apakah beza keupayaan bagi sel voltan yang menggunakan logam Y dan Z sebagai elektrod?

- A 1.0 V
 B 1.3 V
 C 2.1 V
 D 2.8 V
- 41 0.1 mol sulphuric acid neutralizes completely 0.2 mol of an alkali which has the formula $M(OH)_n$.
 What is the value of n in the formula?
*0.1 mol asid sulfurik meneutralkan dengan lengkap 0.2 mol suatu alkali yang mempunyai formula $M(OH)_n$.
 Apakah nilai untuk n dalam formula ini?*

- A 1
 B 2
 C 3
 D 4

- 42 25 cm^3 of 0.5 mol dm^{-3} potassium hydroxide, KOH, is titrated with hydrochloric acid.

What is the volume of 1.0 mol dm^{-3} hydrochloric acid required to neutralise the alkaline solution?

25 cm^3 kalsium hidroksida, KOH, 0.5 mol dm^{-3} dititratkan dengan asid hidroklorik.

Apakah isi padu asid hidroklorik 1.0 mol dm^{-3} yang diperlukan untuk meneutralkan larutan alkali tersebut?

- A 10.0 cm^3
- B 12.5 cm^3
- C 25.0 cm^3
- D 50.0 cm^3

- 43 4.5 g of calcium carbonate powder is reacted with excess dilute hydrochloric acid.

What is the mass of calcium chloride formed in the reaction?

[Relative atomic mass : Ca,40; C,12; O,16; H,1; Cl,35.5]

4.5 g serbuk kalsium karbonat bertindak balas dengan asid hidroklorik secara

berlebihan. Berapakah jisim kalsium klorida yang terbentuk dalam tindak balas ini?

[Jisim Atom Relatif : Ca,40; C,12; O,16; H,1; Cl,35.5]

- A 2.498 g
- B 3.398 g
- C 4.995 g
- D 9.990 g

44 Table 5 shows the results of two chemical tests on a salt solution

Jadual 5 menunjukkan dua keputusan ujian kimia terhadap satu larutan garam

Test Ujian	Procedure Kaedah	Observation Pemerhatian
I	Excess sodium hydroxide solution is added. <i>Larutan natrium hidroksida ditambah secara berlebihan</i>	A white precipitate is formed. It dissolves in excess sodium hydroxide solution. <i>Mendakan putih terbentuk. Mendakan putih larut dalam larutan natrium hidroksida berlebihan</i>
II	Excess ammonia solution is added <i>Larutan ammonia ditambah secara berlebihan</i>	A white precipitate is formed. It does not dissolve in excess ammonia solution. <i>Mendakan putih terbentuk. Mendakan putih tidak larut dalam larutan ammonia berlebihan</i>

Table 5

Based on the information. There are two cations present in the solution.

How to confirm the cations in the solution?

Berdasarkan maklumat tersebut, terdapat dua kation hadir dalam larutan itu.

Bagaimanakah untuk menentusahkan kation-kation itu?

- A Add hydrochloric acid and followed by barium chloride solution
Tambah asid hidroklorik dan diikuti dengan larutan barium klorida.
- B Add nitric acid and followed by silver nitrate solution
Tambah asid nitrik dan diikuti dengan larutan argentum nitrat
- C Add potassium iodide solution
Tambah larutan kalium iodida
- D Add Nessler reagent
Tambah reagen Nessler

45 The following are the formulae of several fertilisers.

Berikut adalah formula bagi beberapa jenis baja.

Urea, $\text{CO}(\text{NH}_2)_2$
Ammonium nitrate,
ammonium nitrat, NH_4NO_3
Ammonium phosphate, *ammonium fosfat* $(\text{NH}_4)_2\text{HPO}_4$
Ammonium sulphate, *ammonium sulfat*, NH_4SO_4

Which of the fertilisers is the best to use?

(Relative atomic mass: C;12, N;14, O;16, H;1, P;31, S;32)

Yang manakah adalah baja paling baik untuk digunakan?

(Jisim atom relatif: C;12, N;14, O;16, H;1, P;31, S;32)

- A Urea
Urea
- B Ammonium nitrate
Ammonium nitrat
- C Ammonium phosphate
Ammonium fosfat
- D Ammonium sulphate
Ammonium sulfat

- 46 Diagram 12 shows profile diagram for the reaction $P + Q \rightarrow S$.
Rajah 12 menunjukkan rajah profil untuk tindak balas $P + Q \rightarrow S$.

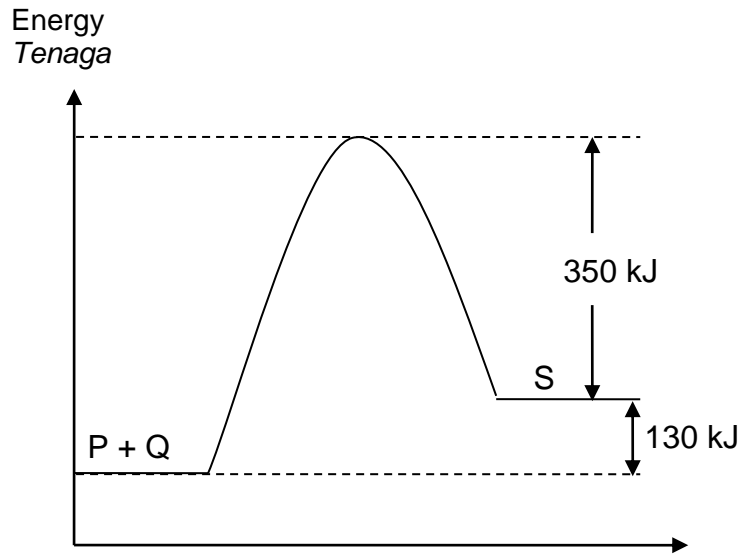


Diagram 12

What is the activation energy for this reaction?
Apakah tenaga pengaktifan untuk tindak balas in?

- A 130 kJ mol^{-1}
- B 350 kJ mol^{-1}
- C 480 kJ mol^{-1}
- D 830 kJ mol^{-1}

- 47 Table 6 shows the total volume of gas collected at regular intervals in a reaction.
Jadual 6 menunjukkan jumlah isipadu gas yang terkumpul pada sela masa tertentu dalam suatu tindak balas.

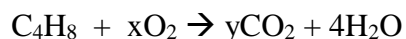
Time/s <i>Masa/s</i>	0	30	60	90	120	150	180	210
Volume of gas / cm ³ <i>Isipadu gas / cm³</i>	0	2.0	3.7	5.2	6.4	7.3	8.6	8.6

Table 6

What is the average rate of reaction in the second minute?
Berapakah kadar tindak balas purata dalam minit kedua?

- A 0.040 cm³ s⁻¹
 B 0.045 cm³ s⁻¹
 C 0.053 cm³ s⁻¹
 D 0.062 cm³ s⁻¹
- 48 If you want to cook 50 eggs within a short time, which is the most suitable method?
Sekiranya anda ingin memasak 50 biji telur dalam masa yang singkat, apakah langkah paling sesuai di lakukan?
- A Boil the eggs in a pan
merebus telur dalam kualiti leper
 B Boil the eggs in pressure cooker
Merebus telur dalam periuk tekanan
 C Steam the eggs in a steamer
Mengukus telur dalam pengukus
 D Fry the eggs in a wok
Menggoreng telur dalam kualiti

- 49 The following equation represents the complete combustion of a hydrocarbon.
Persamaan berikut mewakili pembakaran lengkap bagi satu hidrokarbon.



Calculate the volume of carbon dioxide gas produced when 2.8 g of hydrocarbon is burnt completely in air at standard temperature and pressure.

[Relative atomic mass: H=1, C=12, O=16; Molar volume of gas = $22.4 \text{ dm}^3 \text{ mol}^{-1}$ at standard temperature and pressure]

Hitungkan isipadu gas karbon dioksida yang terhasil apabila 2.8 g hidrokarbon dibakar dengan lengkap di dalam udara pada suhu dan tekanan piawai.

[Jism atom relatif : H=1, C=12, O=16; isipadu molar gas = $22.4 \text{ dm}^3 \text{ mol}^{-1}$ pada suhu dan tekanan piawai]

- A 2.24 dm^3
- B 1.12 dm^3
- C 4.48 dm^3
- D 8.96 dm^3

- 50 Diagram 13 shows a car tyre is made from vulcanized rubber.
Rajah 16 menunjukkan tayar kereta diperbuat daripada getah tervulkan.



Diagram 13

What property of vulcanized rubber makes it suitable to be used for making these car tyres?

Apakah sifat getah tervulkan yang menyebabkannya sesuai digunakan dalam pembuatan tayar kereta?

- A It is torn easily when it is stretched
Ia mudah koyak apabila diregangkan
- B It can take the tremendous stress and strength
Ia boleh menerima tegangan yang terlalu besar dan kuat
- C *It is oxidized easily and not sticky*
Ia mudah dioksidakan dan tidak melekit
- D It is strength and maintaining their elasticity
Ia kuat dan mengekalkan keanjalan

END OF QUESTIONS PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES***MAKLUMAT UNTUK CALON***

1. This question paper consists of 50 questions.

Kertas soalan ini mengandungi 50 soalan.

2. Answer **all** questions.

*Jawab **semua** soalan.*

3. Each question is followed by four alternative answers. A, B, C or D. For each question, choose **one** answer only. Blacken your answer on the objective answer sheet provided.

*Tiap-tiap soalan diikuti oleh empat pilihan jawapan, iaitu A, B, C dan D. Bagi setiap soalan, pilih **satu** jawapan sahaja. Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.*

4. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the new answer.

Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.

5. The diagrams in the questions provided are not drawn to scale unless stated.

Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.

6. You may use a scientific calculator.

Anda dibenarkan menggunakan kalkulator saintifik.